

**DIGITAL CONDUCTIVITY METER  
MODEL 1152 OPERATION MANUAL**



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### Service & Warranty Policy

See Emcee Electronics, Inc Service and Warranty Manual

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# DIGITAL CONDUCTIVITY METER

## 1.0 SCOPE

The Emcee Conductivity Meter is a reliable, convenient and inexpensive instrument for measuring the electrical conductivity of fuels. The monitor incorporates all solid-state components and is completely self-contained. Several instruments are available for various ranges.

Model	Multiplier	Range
152-00-0010	X 1	0 - 2,000 pS/m
152-00-0011	X 10	0 - 20,000 pS/m
152-00-0012	X 100	0 - 200,000 pS/m
152-00-0013	X 1,000	0 - 2,000,000 pS/m
152-00-0014	X 10,000	0 - 20,000,000 pS/m

The instrument will display units between 0 and 1999. The conductivity is equal to the reading times the instrument multiplier and is reported in picosiemens/meter (pS/m). The instrument has a simple calibration and zero check; and indicates when the conductivity level exceeds the upper range of the meter by displaying 1--- on the LCD display.

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## 2.0 SIGNIFICANCE

Fuel products such as jet and diesel fuels which are loaded at high pumping rates, develop a static charge. The Emcee Conductivity Meter measures the ability of the fuel to dissipate that charge.

## 3.0 DEFINITION

The Emcee Conductivity Meter reads conductivity in picosiemens/meter which are equivalent to CU or Conductivity Units.

## 4.0 SUMMARY OF METHOD

The Emcee Conductivity Meter uses a probe consisting of two concentric stainless steel electrodes. When the probe is immersed in fuel, a constant voltage is applied to the electrodes. This results in an electrical current which is amplified and indicated on the meter.

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### 5.0 APPARATUS

5.1 The Emcee Conductivity Meter with Fuel Probe is shown in Figure 1. The meter is a hand held, battery operated portable instrument.

5.2 The controls shown in Figure 1 consist of a measure switch and a calibrate switch.

5.3 Figure 2 shows the location of the probe calibration number.

5.4 Figure 3 shows the instrument zero check.

5.5 Figure 4 shows the instrument calibration check.

5.6 Figure 5 shows a typical fuel test.

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5.7 The Accessory Cable Kit shown in Figure 6 includes a portable reel with a 50' cable . This kit enables the operator to connect the probe to the 50' cable for use in a large tank. The kit also is supplied with a grounding cable for attachment between the conductivity meter and tank ground.

### 6.0 PREPARATION OF SAMPLE

The sample container (preferably a one liter metal container) should be cleaned with a solvent and rinsed with the fuel to be tested. After the sample for test has been withdrawn, wait approximately two minutes for charges in the fuel to dissipate.

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## 7.0 TEST PROCEDURE

7.1 Attach probe to bottom connector on conductivity meter.

7.2 Depress MEASURE switch (M) with probe OUT of fuel sample. Reading should be 000 +/- 001 in approximately 3 seconds (Figure 4). If reading is outside limits, remove probe and recheck zero by depressing MEASURE switch.

7.2.1 If zero adjustment is okay without probe but not when probe is attached, the probe should be thoroughly rinsed with isopropyl alcohol followed by reagent grade toluene and allowed to air dry before retesting for zero.

7.2.2 If the reading is outside of limits with the probe removed, perform calibration procedure outline in Section 10.0.

7.3 Depress CALIBRATE switch (C) with probe OUT of fuel sample. After 3 seconds, reading should be 10 times the probe calibration number +/- 005 (Figure 4).

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## SAMPLE

Probe No. = 40  
Meter Reading = 400 +/- 5 or 395 to 405

7.4 Insert probe in fuel to upper holes and depress MEASURE switch. Report displayed reading times multiplier after 3 seconds for stabilization. (Due to the polarization of the fuel sample the apparent reading will continue to change. Only the reading 3 seconds after depressing the MEASURE switch is correct).

Note: If a "1" is displayed on the left side of the display, the conductivity level exceeds the upper range of the meter.

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## 8.0 PRECISION

The electrical parameters are factory calibrated to 1% of reading. However, due to fuel measurement characteristics, the repeatability and reproducibility limits are as follows:

<u>PS/M</u>	<u>REPEATABILITY</u>	<u>REPRODUCIBILITY</u>
50	4	12
100	6	18
150	8	23
200	9	27
250	10	30
300	11	34
400	5%	10%

Limits Applicable at Room Temperature only.

Precision based on ASTM Round Robin test of standard 0 - 2,000 pS/m meter.

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## 9.0 BATTERY REPLACEMENT

9.1 The Model 1152 Conductivity has an internal battery checking circuit. If batteries are weak the meter will read for a short time and shut itself off. If batteries are too low the unit will not turn on.

9.2 Do not replace batteries when an explosive atmosphere is present.

9.3 When battery replacement is indicated remove the 4 screws holding the back plate exposing the battery housing at the top of the meter.

9.4 Remove the 2 screws on the battery housing and set the housing cover to one side (Figure 7).

9.5 Observe the polarity markings and insert three new batteries as shown in Fig. 7. Battery replacement must be 3) Energizer No. A544 Alkaline, 6v each any other battery replacement will invalidate the Intrinsically Safe Rating.

9.6 Replace back panel and check zero and calibration.

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## 10.0 CALIBRATION

10.1 If either ZERO or CALIBRATE is outside the limits listed in 7.2 or 7.3 the following steps should be completed.

10.2 Remove the probe.

10.3 Insert a small screwdriver into the hole marked ZERO while depressing the MEASURE switch. Adjust the control until the display reads 000 +/- 001.

10.4 While depressing the CALIBRATE switch, insert a small screwdriver into the CALIBRATE hole and adjust for 10 times the probe calibration number +/- 002.

10.5 Attach the probe and depress the MEASURE switch. The reading should be 000 +/- 001. If zero adjustment is okay without probe but not when probe is attached the probe should be thoroughly rinsed with isopropyl alcohol followed by reagent grade toluene and allowed to air dry before retesting for zero.

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## DIGITAL CONDUCTIVITY METER

### 11.0 WARNINGS and MARKINGS

11.1 This device must be grounded before and after introduction into the tank and remain grounded until after complete withdrawal from the tank.

ATTENTION: CE DISPOSITIF DOIT ÊTRE MIS À LA TERRE AVANT DE L'INTRODUIRE DANS LE RÉSERVOIR. MAINTENIR LA CONNEXION À LA TERRE AUSSI LONGTEMPS QUE LE DISPOSITIF N'AURA PAS ÉTÉ RETIRÉ DU RÉSERVOIR

11.2 Substitution of components may impair intrinsic safety.

AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE

11.3 Battery replacement must be (3) Energizer No. A544 Alkaline, 6v each any other battery replacement will invalidate the Intrinsically Safe Rating.

Le remplacement de la batterie doit être (3) Energizer no. A544 alcaline, 6V chaque autre remplacement de la batterie invalidera la cote de sécurité intrinsèque.

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11.4 \* Aluminum Enclosure \* Check polyurethane coating every 2 months. Scratched or chipped polyurethane coating may impair intrinsic safety.

\* Boîtier en aluminium \* Vérifiez le revêtement polyuréthane tous les 2 mois. Le revêtement en polyuréthane rayé ou ébréché peut nuire à la sécurité intrinsèque.

11.5 Do not replace batteries when an explosive atmosphere is present.

Ne remplacez pas les piles lorsqu'une atmosphère explosive est présente.

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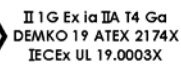
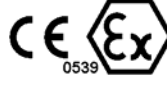
520 CYPRESS AVE., VENICE, FL 34285

EMCEE MODEL 1152

DIGITAL CONDUCTIVITY METER

CLASS I GROUP D

TEMPERATURE CODE T4



## GROUND INDICATOR FOR USE IN HAZARDOUS LOCATIONS

INTRINSICALLY SAFE / SÉCURITÉ INTRINSÈQUE

BATTERY REQUIREMENTS - 3 ENERGIZER NO. A544  
ALKALINE, 6V EACH, TOTAL 18V

WARNING: SUBSTITUTION OF COMPONENTS  
MAY IMPAIR INTRINSIC SAFETY

AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS  
PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE

CAUTION: THIS DEVICE MUST BE GROUNDED BEFORE AND AFTER  
INTRODUCTION INTO THE TANK AND REMAINS GROUNDED UNTIL  
AFTER COMPLETE WITHDRAWAL FROM THE TANK

ATTENTION: CE DISPOSITIF DOIT ÊTRE MIS À LA TERRE  
AVANT DE L'INTRODUIRE DANS LE RÉSERVOIR. MAINTENIR  
LA CONNEXION À LA TERRE AUSSI LONGTEMPS QUE  
LE DISPOSITIF N'AURA PAS ÉTÉ RETIRÉ DU RÉSERVOIR

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## DIGITAL CONDUCTIVITY METER



Figure 1

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Figure 2

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Figure 3

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Figure 4

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Figure 5

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Figure 6

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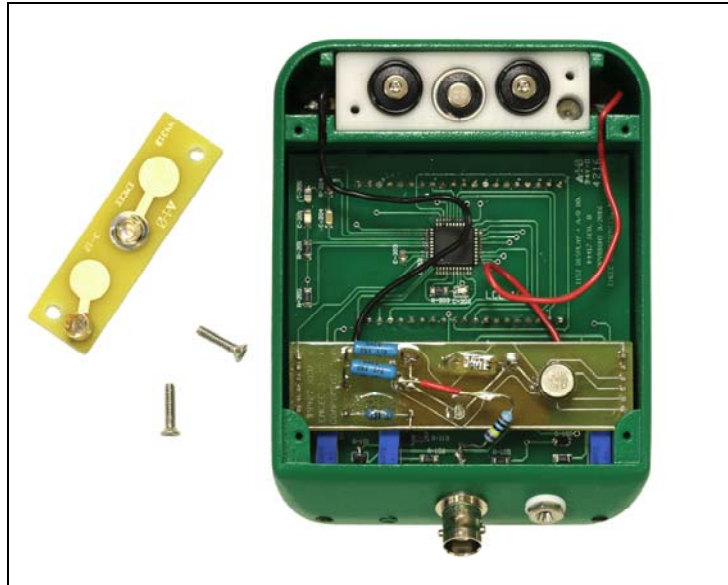


Figure 7

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